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24336 7590 05/13/2008

KEUSEY, TUTUNJIAN & BITETTO, P.C.
20 CROSSWAYS PARK NORTH
SUITE 210
WOODBURY, NY 11797

EXAMINER

HWANG, JOON H

ART UNIT

PAPER NUMBER

2166

DATE MAILED: 05/13/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/715,237

11/17/2003

Arun Kwangil Iyengar

YOR920030490US1

5011

TITLE OF INVENTION: SYSTEM AND METHOD FOR ACHIEVING DIFFERENT LEVELS OF DATA CONSISTENCY (163-19)

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	08/13/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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24336 7590 05/13/2008

KEUSEY, TUTUNJIAN & BITETTO, P.C.
20 CROSSWAYS PARK NORTH
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Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/715,237 11/17/2003 Arun Kwangil Iyengar YOR920030490US1 5011

TITLE OF INVENTION: SYSTEM AND METHOD FOR ACHIEVING DIFFERENT LEVELS OF DATA CONSISTENCY (163-19)

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional NO \$1440 \$300 \$0 \$1740 08/13/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
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HWANG, JOON H 2166 707-201000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date _____

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,237	11/17/2003	Arun Kwangil Iyengar	YOR920030490US1 (163-19)	5011
24336	7590	05/13/2008	EXAMINER	
KEUSEY, TUTUNJIAN & BITETTO, P.C. 20 CROSSWAYS PARK NORTH SUITE 210 WOODBURY, NY 11797			HWANG, JOON H	
			ART UNIT	PAPER NUMBER
			2166	
DATE MAILED: 05/13/2008				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 596 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 596 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability

Application No.

10/715,237

Examiner

JOON H. HWANG

Applicant(s)

IYENGAR ET AL.

Art Unit

2166

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to a telephone interview with Frank V. DeRosa (Reg. No. 43,584) on 4/24/08.
2. ☒ The allowed claim(s) is/are 1,2,4-15, 18-20, 22-24, 44, 45 and 47-53 (renumbered as 1-29).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date ____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date ____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other ____. |

DETAILED ACTION

1. The applicants amended claims 1-2, 7, 12, 20, 22-24, 44-45, and 49, canceled claims 3, 21, 25-43, and 46, and added new claims 53-54 in the amendment filed on 1/17/08.

The pending claims are 1-2, 4-20, 22-24, 44-45, and 47-54.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

3. Authorization for this examiner's amendment was given in a telephone interview with Frank V. DeRosa (Reg. No. 43,584) on 4/24/08.

4. The application has been amended as follows:

Rewrite claim 1 as follows:

"1. In a system comprised of a plurality of objects stored in a plurality of caches, a method for maintaining consistent copies of the objects, comprising the steps of:

providing a plurality of consistency policies including at least a first and second consistency policy, wherein each consistency policy specifies how to reconcile multiple versions of an object;

selectively applying the first consistency policy to achieve a degree of consistency above a consistency level at a first overhead;

selectively applying the second consistency policy to achieve a degree of consistency below the consistency level at a second overhead which is less than the first overhead, to thereby achieve greater system performance by reducing overhead for maintaining consistency;

differentiating or prioritizing communication between a cache and a consistency coordinator by a cache device; and

maintaining at least two queues in the cache to hold messages communicated to the consistency coordinator.";

Rewrite claim 6 as follows:

"6. The method as recited in claim 1, further comprising a step of managing the plurality of consistency policies using the consistency coordinator.";

Rewrite claim 9 as follows:

"9. The method as recited in claim 1, further comprising steps of:
measuring activity of the consistency coordinator, which manages the consistency policies in the system; and
maintaining connections with caches in the system in accordance with the activity of the consistency coordinator.";

Rewrite claim 10 as follows:

"10. The method as recited in claim 9, further comprising communicating the activity of the consistency coordinator to the caches.";

Rewrite claim 14 as follows:

"14. The method as recited in claim 1, wherein a consistency policy of at least one object is specified as a condition in terms of a temporal or semantic state of the at least one object.";

Cancel claim 16;

Cancel claim 17;

Rewrite claim 18 as follows:

"18. The method as recited in claim 1, further comprising the step of prioritizing messages in one queue with a higher priority than messages in another queue.";

Rewrite claim 19 as follows:

"19. The method as recited in claim 1, further comprising the step of maintaining a number of connections by a cache which is dynamically varied depending upon a load on the consistency coordinator.";

Rewrite claim 20 as follows:

“20. A program memory storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for a method for maintaining consistent copies of an object, the method steps comprising:

providing a plurality of consistency policies including at least a first and second consistency policy, wherein each consistency policy specifies how to reconcile multiple versions of an object;

selectively applying the first consistency policy to achieve a degree of consistency above a consistency level at a first overhead;

selectively applying the second consistency policy to achieve a degree of consistency below the consistency level at a second overhead which is less than the first overhead, to thereby achieve greater system performance by reducing overhead for maintaining consistency;

differentiating or prioritizing communication between a cache and a consistency coordinator by a cache device; and

maintaining at least two queues in the cache to hold message communicated to the consistency coordinator.”;

Rewrite claim 44 as follows:

"44. A system for maintaining consistent copies of objects, comprising:
a plurality of caches for storing objects;

a plurality of consistency policies maintained throughout the system, the consistency policies including at least a first and second consistency policy, wherein each consistency policy specifies how to reconcile multiple versions of an object stored in one or more of the plurality of caches; and

a consistency coordinator having selective communication with the caches, which selectively applies the first consistency policy to achieve a degree of consistency above a consistency level at a first overhead and which selectively applies the second consistency policy to achieve a degree of consistency below the consistency level at a second overhead which is less than the first overhead, to thereby achieve greater system performance by reducing overhead for maintaining consistency,

wherein each cache comprises at least two queues which designate an update priority of an object included in each queue; wherein the consistency coordinator manages requests for updates from the caches in accordance with the update priority of a cached object and a consistency policy currently applied for the cached object.”;

Rewrite claim 49 as follows:

"49. The system as recited in claim 44, further comprising an application that updates an object and which select a consistency policy for an object.”;

Rewrite claim 53 as follows:

“53. In a system comprised of a plurality of objects stored in a plurality of caches, a method for maintaining consistent copies of the objects, comprising the steps of:

providing a first consistency policy, where a consistency policy specifies how to reconcile multiple versions of an object, wherein the first consistency policy updates an object for which multiple copies exist by sending out at least one message to invalidate a copy of the object and waiting for an acknowledgement that the invalidation message has been received before assigning a new value to the object;

providing a second consistency policy which updates an object without waiting for an acknowledgement that a message to invalidate a copy of the object has been received;

selectively applying the first consistency policy to achieve a degree of consistency above a consistency level at a first overhead;

selectively applying the second consistency policy to achieve a degree of consistency below the consistency level at a second overhead which is less than the first overhead, to thereby achieve greater system performance by reducing overhead for maintaining consistency;

differentiating or prioritizing communication between a cache and a consistency coordinator by a cache device; and

maintaining at least two queues in the cache to hold messages communicated to the consistency coordinator.”; and

Cancel claim 54.

5. The pending claims are 1-2, 4-15, 18-20, 22-24, 44-45, and 47-53.

Allowable Subject Matter

6. Claims 1-2, 4-15, 18-20, 22-24, 44-45, and 47-53 are allowed.

Claims 1, 20, and 53 identify the distinct features, a plurality of consistency policies including at least a first and second consistency policy, wherein each consistency policy specifies how to reconcile multiple versions of an object; selectively applying the first consistency policy to achieve a degree of consistency above a consistency level at a first overhead; selectively applying the second consistency policy to achieve a degree of consistency below the consistency level at a second overhead which is less than the first overhead, to thereby achieve greater system performance by reducing overhead for maintaining consistency; differentiating or prioritizing communication between a cache and a consistency coordinator by a cache device; and maintaining at least two queues in the cache to hold messages communicated to the consistency coordinator, which are not taught or suggested by the prior art of records. Claim 44 identifies the distinct features, a plurality of consistency policies including at least a first and second consistency policy, wherein each consistency policy specifies how to reconcile multiple versions of an object; selectively applying the first consistency policy to achieve a degree of consistency above a consistency level at a first overhead;

Art Unit: 2166

selectively applying the second consistency policy to achieve a degree of consistency below the consistency level at a second overhead which is less than the first overhead, to thereby achieve greater system performance by reducing overhead for maintaining consistency; each cache comprises at least two queues which designate an update priority of an object included in each queue; wherein the consistency coordinator manages requests for updates from the caches in accordance with the update priority of a cached object and a consistency policy currently applied for the cached object, which are not taught or suggested by the prior art of records. The closest prior art, Challenger et al. (U.S. Patent No. 6,567,893) disclosing caching of objects using a publish and subscribe paradigm, fails to suggest the claimed limitations as mentioned above in combination with other claimed elements. The above features in conjunction with all other limitations of the dependent and independent claims 1-2, 4-15, 18-20, 22-24, 44-45, and 47-53 are hereby allowed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOON H. HWANG whose telephone number is (571)272-4036. The examiner can normally be reached on 9:30-6:00(M~F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T. Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2166

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joon Hwang
Primary Examiner
Technology Center 2100

4/24/08
/Joon H. Hwang/
Primary Examiner, Art Unit 2166